

What is claimed is:

1. A workpiece taking-out apparatus, which measures a position and a posture of a workpiece with a three-dimensional visual sensor mounted on a robot and takes out the workpiece with the robot, said workpiece taking-out apparatus comprising:

height distribution acquisition means which acquires data of height distribution of an existing area of workpieces;

positional information calculation means which calculates, on the basis of height information in the vicinity of a specific workpiece included in the data of height distribution acquired by said height distribution acquisition means, an approximate position or the approximate position and an approximate posture of the specific workpiece; and

robot position determination means which determines a measurement position of said robot for performing measurement for the specific workpiece with said three-dimensional visual sensor.

2. The workpiece taking-out apparatus according to claim 1,

wherein taking-out of workpieces by said robot is performed repeatedly, and

said height distribution acquisition means reacquires the data of height distribution only for the vicinity of a place where a workpiece taken out last time existed.

3. The workpiece taking-out apparatus according to claim 1,

wherein said height distribution acquisition means comprises means which sets a range for acquiring height distribution in advance.

4. The workpiece-taking out apparatus according to claim 1,

wherein the plurality of workpieces are contained in a container,

said container has an opening surrounded by an outer wall of said container, and

said height distribution acquisition means sets an area inside the opening as a height distribution acquisition range.

5. The workpiece-taking out apparatus according to any one of claims 1 to 4, further comprising means which judges, from a relation between the data of height distribution and an existing range of objects mounted on said robot, a risk of interference between said mounted objects and any one of the plurality of workpieces when said robot moves to the measurement position. 4

6. The workpiece-taking out apparatus according to any one of claims 1 to 4, further comprising means which judges, from a relation between the data of height distribution and an existing range of objects mounted on said robot, a risk of interference between said mounted objects and any one of the workpieces other than the specific workpiece when said robot moves to a taking-out position for taking out the specific workpiece. 4

7. The workpiece-taking out apparatus according to claim 5, further comprising means which judges, from a relation between the data of height distribution and an existing range of objects mounted on said robot, a risk of interference between said mounted objects and any one of the workpieces other than the specific workpiece when said robot moves to a taking-out position for taking out the specific workpiece.